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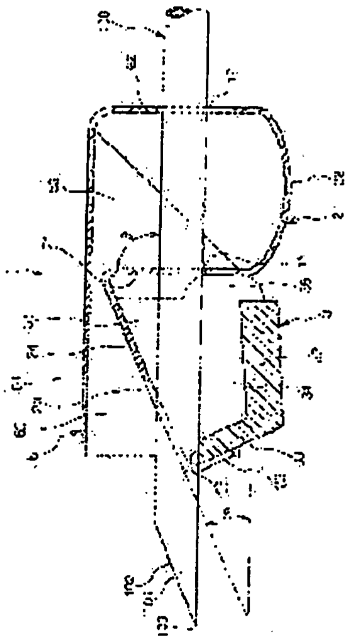
(54) PROTECTOR

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a protector with high safety in the case of disposal treatment by allowing a needle tip of a needle after using it to be covered by simple operation.
SOLUTION: This protector 1 has: a sheet-like protector body 2 consisting of a metallic material; and a plastic member 3 installed fixedly to a fourth site 24 of the protector body 2. The needle 100 is put through a first hole 11 formed at the first site 21 of the protector body 2. In the state of covering the needle tip 101, the inclination of the first site 21 with respect to the needle 100 is reduced to generate or increase friction between the first hole 11 and the needle 100 to stop the protector 1 with respect to the needle 100. An abutting part 36 formed at the plastic member 3 is abutted on a part on the one end side of the first site 21 from a tip side.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

This invention relates to the protector which can cover the needle point of the needle object used for a blood vessel etc. by carrying out a puncture in the case of an infusion solution or blood collecting.

[0002]

[Description of the Prior Art]

In case an infusion solution, blood collecting, administration of a drug solution, etc. are performed to a patient, the needle object of medical application like a hypodermic needle in the air is used. Although abandonment is presented with the needle object after use, when it discards as it is, it has a possibility that the accident in which an abandonment operator etc. stabs a finger etc. with the needle point accidentally may occur. Especially, since blood adheres and remains, there is also a possibility of causing infection in the front face and the interior of a needle object, with such an incorrect prickle.

[0003]

In the present condition, in order to prevent an incorrect prickle, the measures of a used needle object putting and canceling a cap are taken, but even if it faces the activity which puts a cap on a needle object, in order not to stab an operator's hand with the needle point, careful attention must be paid and the problem that abandonment processing of the needle object after use takes great time and effort is.

[0004]

Then, as a protector which can cover the needle point of the needle object after use safely, at the time of use of a needle object, the part in the middle of a needle object is equipped, it moves to the needle point after use, and the wrap protector is proposed in the needle point (for example, patent reference 1 and patent reference 2 reference).

[0005]

however, in the protector indicated by the patent reference 1 and the patent reference 2 In order to prevent that the protector which covered the needle point secedes from the needle point There was a problem of preparing the engagement section (a crevice or heights) with a protector in a needle object, or connecting the hub and protector which were installed in the end face side of a needle object with string, yarn, etc. that a special (it is separate) means was needed.

[0006]

In order to solve this problem, if it can slide along with the longitudinal direction of a needle object and becomes a wrap posture about the needle point, with the posture with which the part in the middle of a needle object is equipped, the protector constituted so that the migration which met the longitudinal direction of a needle object as brakes were applied to the needle object might be forbidden is proposed (patent reference 3 reference). The protector of a publication has the advantage that the special means for stopping the protector which made it move in the direction of a tip toward the needle point in the location of the needle point is unnecessary in this patent reference 3.

[0007]
In the protector indicated by the patent reference 3 The longitudinal direction of a needle tube 20 (needle object) is met. At the time of the 1st posture which can slide When a needle tube 20 inserts and engages with the 3rd hole 13 (needle object contact section), the elastic force of the protector body 3 is resisted and whenever [to the needle tube 20 of the 1st part 31 / tilt-angle] is maintained by the comparatively large condition through the front connection 35 (the 4th part). As for whenever [to the needle tube 20 of the viewpoint which reduces the sliding friction to the needle tube 20 of a protector to the 1st part 31 / tilt-angle], in such 1st posture, it is desirable that it is close to a right angle as much as possible.
[0008]
however, in the protector of a publication, in the patent reference 3 Depending on conditions, such as the quality of the material of the metal plate which constitutes the protector body 3, and thickness At the time of the 1st posture, the protector body 3 deformed so that the include angle of the front connection 35 (the 4th part) and the 1st part 31 might become small, and there was a case where whenever [tilt-angle / of the 1st part 31] was unmaintainable at the include angle fully near a right angle. Consequently, there was a case where the sliding nature to the needle tube 20 in the 1st posture fell.
[0009]
[Patent reference 1]
JP,9-99068,A
[Patent reference 2]
International public presentation/[99th] No. 08742 pamphlet
[Patent reference 3]
JP,2002-210005,A
[0010]
[Problem(s) to be Solved by the Invention]
The purpose of this invention can cover the needle point of the needle object after use by easy actuation, and is to offer a protector with high safety on the occasion of abandonment processing etc.
[0011]
[Means for Solving the Problem]
Such a purpose is attained by this invention of following the (1) - (5). Moreover, it is desirable that it is following the (6) - (9).
[0012]
(1) It is the protector which can be relatively displaced along with the longitudinal direction of a needle object which has the sharp needle point at a tip into the 1st movable posture and the 2nd posture in which the relative migration which met at the longitudinal direction of said needle object where the needle point of said needle object is covered is forbidden,
The 1st part in which the 1st hole which comes to deform the plate-like part material which has the elasticity which consisted of metallic materials, and said needle object penetrates was formed, The 2nd part in which the 2nd hole which is located in a end face side and said needle object penetrates from this 1st part was formed, The 3rd part which connects said the 1st end of a part and said 2nd part, The protector body which demonstrates elastic force which acts so that it may have the 4th part formed so that it might extend in the direction of a tip mostly from the other end of said 1st part and whenever [to said needle object of said 1st part / tilt-angle] may be made small in said the 1st posture and said 2nd posture,
The needle object contact section which has the function to prevent that whenever [to said needle object of said 1st part / tilt-angle] changes by being prepared in a 4th [of said protector body / said] part side, and contacting the peripheral face of said needle object at the time of said 1st posture,

It is prepared in a 4th [of said protector body / said] part side, and has the contact section which contacts the part by the side of the end of said 1st part from a tip side at least at the time of said 1st posture,

When it moves in the direction of a tip relatively to said needle object and said needle object contact section passes said needle point from said 1st posture Deform so that it may become smaller than the time of whenever [tilt-angle / of said 1st part to said needle object] being said 1st posture according to the elastic force of said protector body, and it becomes said 2nd posture. The protector characterized by being constituted so that the relative migration which the frictional force between the inner skin of said 1st hole and the peripheral face of said needle object occurred or increased by this, and met the longitudinal direction of said needle object may be forbidden.

[0013]

(2) It is installed fixed to said 4th part of said protector body, and has the plastics member which consisted of resin ingredients,

Said needle object contact section and said contact section are a protector given in the above (1) which consists of said a part of plastics members, respectively.

[0014]

(3) Said plastics member is arranged with an almost perpendicular posture to said 4th part, and it has the side-attachment-wall section of the pair located mutual almost in parallel through said needle object,

Said contact section is a protector given in the above (2) which consists of heights by which protrusion formation was carried out, respectively from the end face by the side of the end face of said both-sides wall.

[0015]

(4) A protector the above (1) which satisfies the relation it is unrelated 0.8 <=B/A<=1 when magnitude of the include-angle change to said needle object of said 4th part at the time of comparing the time of said 1st posture and said 2nd posture is set to A and magnitude of the include-angle change to said needle object of said 1st part is set to B thru/or given in either of (3).

[0016]

(5) Said contact section is a protector the above (1) which maintains the condition of having contacted also at the part by the side of the end of said 1st part or the time of said 2nd posture from the tip side thru/or given in either of (4).

[0017]

(6) The include angle to said needle object of said 1st part at the time of said 1st posture is a protector the above (1) which is 85-95 degrees thru/or given in either of (5).

[0018]

(7) Said 4th part is a protector the above (1) which has the notch or hole which inserts in said needle object at the time of said 1st posture thru/or given in either of (6).

[0019]

(8) A protector the above (1) equipped with the wrap covering section for said some of protector bodies [at least] thru/or given in either of (7).

[0020]

(9) A protector the above (1) which has the wrap needle point receptacle section for said needle point from a tip side in said 2nd posture thru/or given in either of (8).

[0021]

[Embodiment of the Invention]

Hereafter, the protector of this invention is explained to a detail based on the suitable operation gestalt shown in an accompanying drawing.

[0022]

The cross-section side elevation in which drawing 1 shows the operation gestalt (the 1st posture) of the protector of this invention, and drawing 2 are the cross-section side elevations showing the operation gestalt (the 2nd posture) of the protector of this invention. In addition, below, a "tip" and right-hand side are explained for the left-hand side in drawing 1 and drawing 2 , and an "end" and the bottom are explained for a "end face" and the bottom as the "other end."

[0023]

The protector 1 shown in these drawings is used equipping the needle object (needle tube) 100 of medical application, and prevents an incorrect prickle etc. by what (wrap) the needle point 101 is contained for after use of a needle object 100.

[0024]

Along with the longitudinal direction (shaft orientations) of a needle object 100, the variation rate (deformation) of this protector 1 has become possible relatively at the 1st movable posture (posture shown in drawing 1), and the 2nd posture (posture shown in drawing 2) in which the relative migration which is in the condition which covered the needle point 101 of a needle object 100, and met the longitudinal direction of a needle object 100 is forbidden so that it may mention later.

[0025]

Moreover, the parts of drawing 1 and the space near side of drawing 2 and the part by the side of the space back of a protector 1 have symmetrical composition through the flat surface parallel to space including the medial-axis line of a needle object 100.

[0026]

A needle object 100 is a hollow needle, for example, consists of stainless steel, aluminum or an aluminium alloy, titanium, or a metallic material like a titanium alloy. Extraction of blood, impregnation of a drug solution, etc. are given to a living body (a patient's blood vessel) through the needle object 100 which carried out the puncture.

[0027]

The sharp needle point 101 is formed in the point of a needle object 100. This needle point 101 is making the configuration which has the blade surface 102 which carried out the predetermined include-angle inclination to the medial-axis line of a needle object 100.

[0028]

The protector 1 has the protector body 2 formed by transforming the plate-like part material which has the elasticity which consisted of metallic materials (carrying out bending), and the plastics member 3 fixed to this protector body 2 (fixing).

[0029]

The 1st part 21 in which, as for the protector body 2, the 1st hole 11 was formed as shown in drawing 1 (brake section), It is prepared in the end face side (needle origin side) of this 1st part 21, and has the 3rd part 23 which connects the 2nd part 22 in which the 2nd hole 12 was formed, and the end of the 1st part 21 and the end of the 2nd part 22.

[0030]

If it puts in another way, the 3rd part 23 is located between the end section of the 1st part 21, and the end section of the 2nd part 22. And in side view, the 1st part 21, the 2nd part 22, and the 3rd part 23 are formed so that the shape of an abbreviation "KO" character (the shape of or an "Abbreviation C" character) may be made as these whole.

[0031]

The needle object 100 has penetrated in the 1st hole 11 and 2nd hole 12. As for the configuration of the 1st hole 11, it is desirable that it is circular.

[0032]

Moreover, the protector body 2 has further the 4th (prepared) part 24 formed so that it might extend in the direction of a tip mostly through a flection (or bend) from the other end of the 1st part 21. With this operation gestalt, in the 1st posture and 2nd posture, the 4th part 24 and 1st part 21 are arranged so that an acute angle may be made.

[0033]
Moreover, the protector body 2 has further the 5th (prepared) part 25 formed so that it might extend from the tip of the 4th part 24 to the down side in drawing through a flection (or bend). With the configuration of illustration, the 5th part 25 is formed almost perpendicularly to the 4th part 24.

[0034]
The notch (or hole) 26 which can insert in a needle object 100 is formed in the 4th part 24. With the configuration of illustration, the notch 26 is further gone across and formed in the 5th part 25 continuously from the 4th part 24. The needle object 100 has inserted in this notch 26 at the time of the 1st posture (penetration).

[0035]
Such a protector body 2 consists of metallic materials. Thereby, in the 2nd posture, the frictional force of the inner skin (inner circumference section) of the 1st hole 11 and the peripheral face (front face) of a needle object 100 becomes large enough, and a brake operation of the 1st part 21 (brake section) is demonstrated certainly. Especially as a metallic material which constitutes the protector body 2, although not limited, stainless steel, aluminum or an aluminium alloy, titanium or a titanium alloy, copper, or a copper system alloy is mentioned, for example.

[0036]
In addition, although the protector body 2 is that in which each part was formed in one with this operation gestalt, the protector body 2 may be constituted from this invention by two or more components.

[0037]
The plastics member 3 is installed to the 4th part 24 of the protector body 2 fixed (it is eternal like [physical relationship with the 4th part 24]). What kind of approach is sufficient as the fixed approach for the protector body 2 of the plastics member 3, for example, engagement by caulking and irregularity, adhesion by adhesives, welding, etc. are mentioned.

[0038]
The plastics member 3 has the 1st wall (side-attachment-wall section) 31 of the pair located mutual (inserting in between) almost in parallel through a needle object 100, the 2nd wall 32 located in the opposite side through a needle object 100 to the 4th part 24, and the 3rd wall 33 located in the point of the plastics member 3 while being arranged almost perpendicularly to the 4th part 24. The 3rd wall 33 is arranged almost in parallel with the 5th part 25, and it is located so that the inside of the 5th part 25 may be contacted.

[0039]
Inside the plastics member 3, as it is surrounded by these walls, the needle point storage space 34 is formed. As shown in drawing 2 , the needle point 101 of a needle object 100 is contained by this needle point storage space 34 at the time of the 2nd posture.

[0040]
In posture change of a protector 1, the variation rate (migration) of such a plastics member 3 is carried out united with the 4th part 24 and the 5th part 25.

[0041]
The upper limit section in drawing of the 3rd wall 33 is a needle object 100 with the needle object contact section 35 which contacts from the bottom in drawing at the time of the 1st posture. The contact surface over the needle object 100 of the needle object contact section 35 may be the curve side of the shape of radii which may be a flat surface and corresponds to the peripheral face of a needle object 100.

[0042]
At the time of the 1st posture, the plastics member 3 is energized by the elasticity (spring nature) of the protector body 2 in the direction which is rotated to the clockwise rotation in drawing 1 , and the pressure welding has been carried out to the needle object 100 by the needle object contact section 35 according to this energization force at the time of the 1st posture.

[0043]
The plastics member 3 seems in addition, to make the tubed configuration of having for example, not only a configuration like illustration but the needle object contact section as a hole.
[0044]
The plastics member 3 containing the needle object contact section 35 is constituted from this operation gestalt by the resin ingredient (synthetic-resin ingredient). Thereby, in the 1st posture, the frictional resistance between the needle object contact section 35 and the peripheral face of a needle object 100 is reduced, and the sliding friction to the needle object 100 of a protector 1 becomes smaller. Consequently, a protector 1 is smoothly movable along with the longitudinal direction (shaft orientations) of a needle object 100 at the time of the 1st posture (by comparatively small operating physical force).
[0045]
Especially as a resin ingredient which constitutes the plastics member 3 (needle object contact section 35), although not limited, various resin ingredients, such as polyethylene, polypropylene, polyurethane, polystyrene, a polycarbonate, polyester, ABS plastics, an AS resin, fluorine system resin, and polyacetal, are mentioned.
[0046]
In addition, the contact surface over the needle object 100 of the needle object contact section 35 may have the shape of the shape for example, of a "V" character, and a "KO" character etc.
[0047]
At the time of use of a needle object 100, such a protector 1 is the 1st posture (when carrying out a puncture to a living body etc.), and is made into the condition of having been located in the part in the middle of a needle object 100 (or part by the side of a end face). In the 1st posture, a needle object 100 inserts in the 2nd hole 12, the 1st hole 11, and a notch 26 (penetration), and projects from the tip of a protector 1.
[0048]
By moving in the direction of a tip from the 1st posture relatively to a needle object 100, a variation rate (deformation) is carried out to the 2nd posture shown in drawing 2 , and a protector 1 is a wrap about the needle point 101. In this 2nd posture, it becomes smaller than the time of the include angle of the 1st part 21 and the 3rd part 23 in the protector body 2 to make being the 1st posture. That is, the variation rate (deformation) of the protector 1 is carried out to the 2nd posture from the 1st posture by deforming so that the 1st part 21 and 3rd part 23 may close (the 3rd part 23 is approached like [the 1st part 21]).
[0049]
The protector body 2 demonstrates elastic force which acts so that whenever [to the needle object 100 of the 1st part 21 / tilt-angle] may be made small in the 1st posture and 2nd posture. This produces the variation rate (deformation) from the 1st posture to the 2nd posture with the elasticity (elastic force) of the protector body 2 (part of the neighborhood which mainly includes the 3rd part 23).
[0050]
Namely, it sets in the natural condition (condition of having not equipped a needle object 100 with the protector 1) of not giving external force to a protector 1. The include angle of the 1st part 21 and the 3rd part 23 to make It is still smaller than the condition which shows in drawing 2 , and the needle object 100 is equipped with it, a protector 1 being used as the condition of having deformed so that the 1st part 21 and 3rd part 23 might open from such a natural condition (it keeps away from the 3rd part 23 like [the 1st part 21]) (elastic deformation).
[0051]
Where a needle object 100 is equipped with a protector 1, the 1st part 21 is energized by such configuration in the direction in which whenever [to a needle object 100 / tilt-angle] (include angle shown by theta in drawing 1 and theta' in drawing 2) becomes small. That is, the part of the neighborhood including the 3rd part 23 of the protector body 2 serves as an energization

means to energize the 1st part 21 in the direction in which whenever [to the needle object 100 of the 1st part 21 / tilt-angle] becomes small with the elasticity.

[0052]

Although it can express with two magnitude by which [of the angle which the 1st part 21 and needle object 100 make] whenever [to the needle object 100 of the 1st part 21 / tilt-angle] chooses here In this specification, "whenever [to the needle object 100 of the 1st part 21 / tilt-angle]" shall point out the include angle of the angle (angle of the smaller one) which becomes less than 90 degrees at the time of the 2nd posture. That is, in this operation gestalt, it is the include angle shown by theta in drawing 1 , and theta' in drawing 2 . This include angle is hereafter called "whenever [part tilt-angle / of ** a 1st]."

[0053]

In the 1st posture, it is prevented that a protector 1 deforms so that whenever [part tilt-angle / of ** a 1st] may become small according to the energization force of said energization means, and as shown in drawing 1 , when the needle object contact section 35 is in contact with the peripheral face of a needle object 100, as mentioned above, thereby, theta is maintained at the comparatively large include angle whenever [in the 1st posture / part tilt-angle / of ** a 1st].

[0054]

Therefore, with the 1st posture, the clearance is formed between the 1st hole 11 and a needle object 100, and the frictional force between the inner skin of the 1st hole 11 and the peripheral face of a needle object 100 is not acting substantially, or is in the comparatively small condition. That is, with the 1st posture, the 1st part 21 produces a brake operation.

[0055]

Thus, by contacting a needle object 100 at the time of the 1st posture, the needle object contact section 35 prevents what whenever [part tilt-angle / of ** a 1st] becomes small (it changes), and has the function which reserves a brake operation of the 1st part 21. Namely, with the 1st posture, the protector 1 is in the brake operation reservation condition, when the needle object contact section 35 contacts a needle object 100.

[0056]

Thus, with the 1st posture, the needle object contact section 35 is in the condition that the pressure welding was carried out to the peripheral face of a needle object 100, according to the energization force of said energization means. Since the needle object contact section 35 is constituted from this operation gestalt by the resin ingredient as mentioned above, the protector 1 is movable more smoothly to the needle object 100 (by comparatively small operating physical force).

[0057]

If a protector 1 is relatively moved in the direction of a tip to a needle object 100, the needle object contact section 35 passes the latest section 103 of the needle point 101 and the needle object contact section 35 stops contacting a needle object 100 from the 1st posture, a brake operation reservation condition will be canceled and the variation rate (deformation) of the protector 1 will be elastically carried out to the 2nd posture according to the energization force of said energization means.

[0058]

With the 2nd posture, compared with the time of the 1st posture, the variation rate (deformation) of the protector 1 is carried out so that the 1st part 21 may rotate to the clockwise rotation in drawing to the 3rd part 23 (needle object 100). this shows drawing 2 -- as -- whenever [part tilt-angle / of ** a 1st] -- the time of the 1st posture -- small -- becoming -- **** -- theta'<theta -- it is theta'.

[0059]

The variation rate (rotation) also of the 4th part 24, 5th part 25, and plastics member 3 is carried out to the clockwise rotation in drawing to the 3rd part 23 (needle object 100) with posture change of the 1st part 21. whenever [to the needle object 100 of the 4th part 24 / tilt-angle] --

the time of the 1st posture -- alpha (refer to drawing 1) -- it is -- the time of the 2nd posture -- alpha'<alpha -- it is alpha' (refer to drawing 2).

[0060]

With the 2nd posture, with the variation rate (deformation) of the protector body 2 which was mentioned above, the 3rd wall 33 of the plastics member 3 approaches a needle object 100 (needle point 101), and moves to a location which covers the latest section 103 of the needle point 101 from a tip side. If it puts in another way, the 3rd wall 33 will close from the bottom in drawing to the needle point 101, and it is a wrap from a tip side about the latest section 103 of the needle point 101. Thus, the 3rd wall 33 of the plastics member 3 constitutes the wrap needle point receptacle section for the needle point 101 from a tip side at the time of the 2nd posture.

[0061]

In such 2nd posture, when the 1st part 21 of a protector 1 functions as a brake to a needle object 100, relative migration which the protector 1 met in the longitudinal direction of a needle object 100 is forbidden (inhibition). That is, by becoming smaller than the time of whenever [part tilt-angle / of ** a 1st] being the 1st posture according to the energization force of said energization means, the pressure welding of the inner skin (inner circumference section) of the 1st hole 11 is carried out to the peripheral face (front face) of a needle object 100, and the frictional force between the inner skin of the 1st hole 11 and the peripheral face of a needle object 100 occurs or increases. This frictional force acts on a protector 1 as damping force, and forbids migration of the protector 1 in alignment with the longitudinal direction of a needle object 100 (inhibition).

[0062]

by such configuration, the needle point 101 contains to the needle point storage space 34 -- having (it becoming the 2nd posture) -- the needle point 101 does not project more than a protector 1

[0063]

Although the desirable magnitude changes also with outer diameters of a needle object 100, one usually desirable [what is larger about 0.01-1mm than the outer diameter of a needle object 100], and large about 0.05-0.2mm of the bore of the 1st hole 11 is more desirable. Thereby, in the 2nd posture, the frictional force between the inner skin of the 1st hole 11 and the peripheral face of a needle object 100 (damping force which acts on a protector 1) becomes large, and relative migration in alignment with the longitudinal direction of a needle object 100 is forbidden more certainly (inhibition).

[0064]

In addition, in this invention, the 1st hole 11 may be the things (C character-like thing etc.) to which a part of hoop direction suffered a loss (the same is said of the 2nd hole 12).

[0065]

Moreover, when circular, as for the configuration of the 2nd hole 12, what is larger about 0.05-1mm than the outer diameter of the viewpoint which reduces the sliding friction in the 1st posture to the needle object 100 is desirable [to a needle object 100, if sliding is possible, it will not restrict circularly but / the bore].

[0066]

Moreover, it is good even if smooth [in the contact surface with a needle object 100] by a resin ingredient which mentioned above the part near the 2nd hole 12 (contact surface with a needle object 100) constituting from this invention, or performing bending etc. Thereby, the frictional force between the inside of the 2nd hole 12 and the peripheral face of a needle object 100 is reduced. Therefore, actuation (it is wrap actuation about the needle point 101 at a protector 1) which can reduce more the sliding friction to the needle object 100 of the protector 1 in the 1st posture, consequently moves a protector 1 in the direction of a tip relatively to a needle object 100 can be performed still more easily and smoothly.

[0067]

Although the desirable value changes with the components, outer diameters of a needle object 100, etc., as for the thickness of the plate-like part material (especially the 1st part 21) which constitutes the protector body 2, it is desirable that it is about 0.05-2mm, and it is usually more desirable that it is about 0.06-0.2mm. In said range, when it becomes that in which especially the protection nature of damping force or the needle point 101 that acts on a protector 1 in the 2nd posture was excellent when it considered as a comparatively thick thing and considers as a comparatively thin thing, it becomes the thing excellent in especially the ease of carrying out of sliding to the needle object 100 in workability or the 1st posture.

[0068]

Now, such a protector 1 is formed in the 4th part 24 side of the protector body 2, and has the contact section 36 which contacts the part by the side of the end of the 1st part 21 from a tip side at the time of the 1st posture.

[0069]

The contact section 36 is constituted from a part of plastics member 3 by this operation gestalt. That is, the contact section 36 consists of heights of the pair by which protrusion formation was carried out, respectively from the end face by the side of the end face of the 1st wall 31 (side-attachment-wall section) of a pair.

[0070]

With the configuration of illustration, the contact section 36 is in contact with the range from near the 1st [of the 1st part 21] hole 11 to near the end of the 1st part 21. In addition, the range where the contact section 36 in the 1st part 21 contacts may be narrower than the configuration of illustration, or may be wide, and it may be constituted so that the contact section 36 may contact even the part by the side of the other end of the 1st part 21.

[0071]

In this invention, the following effectiveness is acquired by forming such the contact section 36. Although the 1st part 21 has received the force (moment) of the circumference of a ****** clock from the 4th part 24 at the time of the 1st posture shown in drawing 1 , in this invention, the contact section 36 serves as the supporting point, and this force acts like a lever (lever) to the 1st part 21. Consequently, at the time of the 1st posture, it acts so that theta may be enlarged more whenever [part tilt-angle / of ** a 1st], and whenever [part tilt-angle / of ** a 1st], theta becomes the magnitude more near a right angle, and the clearance between the 1st hole 11 and a needle object 100 is secured more greatly. Thereby, the sliding friction to the needle object 100 of a protector 1 can be reduced more (the 1st effectiveness of the contact section 36).

[0072]

Moreover, the contact section 36 maintains the condition of having contacted also at the part by the side of the end of the 1st part 21 or the time of the 2nd posture shown in drawing 2 from the tip side (or contiguity). When this compares the time of the 1st posture and the 2nd posture, the include-angle change (alpha-alpha') to the needle object 100 of the 4th part 24 and the include-angle change (theta-theta') to the needle object 100 of the 1st part 21 are almost equal. This means the thing of the include-angle change of the 4th part 24 when displacing from the 1st posture to the 2nd posture for which all are mostly reflected in include-angle change of the 1st part 21. Thus, in this invention, include-angle change of the 1st part 21 when displacing from the 1st posture to the 2nd posture can be enlarged, consequently damping force (fixed force) over the needle object 100 of the protector 1 in the 2nd posture can be made more powerful (the 2nd effectiveness of the contact section 36).

[0073]

In this invention, although especially the outer diameter of a needle object 100 is not limited, the effectiveness by having formed such the contact section 36 is especially discovered notably, when a needle object 100 is comparatively thick (an outer diameter is about 0.7-2.0mm).

[0074]

In addition, the contact section 36 may be estranged from the 1st part 21 at the time of the 2nd posture that what is necessary is just to contact the 1st part 21 at least at the time of the 1st posture.

[0075]

Moreover, magnitude (alpha-alpha') of the include-angle change to the needle object 100 of the 4th part 24 when comparing the time of the 1st posture and the 2nd posture is set to A. When magnitude (theta-theta') of the include-angle change to the needle object 100 of the 1st part 21 is set to B, it is desirable to satisfy the relation it is unrelated 0.8 <=B/A<=1, and it is more desirable to satisfy the relation which it becomes 0.9 <=B/A<=1. Thereby, include-angle change of the 4th part 24 can fully be reflected in include-angle change of the 1st part 21, and damping force (fixed force) over the needle object 100 of the protector 1 in the 2nd posture can be made powerful enough.

[0076]

Moreover, the contact section 36 may be fixed by approaches, such as adhesion by adhesives, as opposed to the 1st part 21 (fixing).

[0077]

Moreover, as for theta, from a viewpoint which reduces more certainly the sliding friction to the needle object 100 of the protector 1 at the time of the 1st posture, it is [whenever / part tilt-angle / of ** the 1st at the time of the 1st posture] desirable that it is about 85-95 degrees.

[0078]

Moreover, in such a protector 1, in the 2nd posture, when the 5th part 25 or plastics member 3 grade is pressed in the direction of a end face, it has a means to act the force in which theta' becomes smaller whenever [part tilt-angle / of ** 1st], to the 1st part 21 (about 11 hole [1st] plate-like part material).

[0079]

That is, in the 2nd posture, when thrust is applied in the direction of a end face to the tip of the 5th part 25 or the plastics member 3, this thrust is transmitted to the 1st part 21 through the 4th part 24, and it acts so that theta' may become small whenever [part tilt-angle / of ** a 1st]. By this, the frictional force between the inner skin of the 1st hole 11 and the peripheral face of a needle object 100 (damping force which acts on a protector 1) increases further, said thrust is opposed, and migration of a protector 1 is forbidden more certainly (inhibition).

[0080]

Moreover, also if strong thrust should act and a protector 1 should move in the direction of a end face slightly especially, since the latest section 103 of the needle point 101 contacts the 3rd wall 33 (needle point receptacle section), it is prevented certainly that the needle point 101 projects exceeding a protector 1.

[0081]

Moreover, the protector 1 of this operation gestalt has the wrap covering section 6 further for a part of protector body 2 and plastics member [at least] 3. The covering section 6 is formed so that it may extend in the direction of a tip mostly from the other end (upper limit section in drawing) of the 2nd part 22 and may extend in down [in drawing], respectively from the 1st covering section 61 located so that the outside of the 4th part 24 may be covered, and the flank of both 1st covering sections 61, and the side of the protector body 2 and the plastics member 3 consists of the 2nd covering sections 62 of a wrap pair.

[0082]

Such the covering section 6 has the function which bars the actuation for which an about 35 needle object contact section part is moved in the direction of a tip at the time of the 2nd posture. For example, when the plastics member 3 tends to be pinched with a finger and it is going to pull in the direction of a tip, since that side is covered with the covering section 6, the point of the plastics member 3 cannot touch this with a finger etc., and, therefore, cannot perform this actuation. Thereby, in the protector 1 of this operation gestalt, even if it is a case as you tried to make it secede from a needle object 100 intentionally for example, separation from a needle object 100 can be prevented and especially safety is high.

[0083]

Next, an example of the operation of a protector 1 is explained to a detail.

[1] Where the protector 1 in the 1st posture is located in the end face side in the middle of a needle object 100, carry out the puncture of the needle object 100 to a patient's blood vessel (living body) etc., and perform extraction of blood, impregnation of a drug solution, etc.

[0084]

[2] If extraction of blood or impregnation of a drug solution is ended, a needle object 100 will be sampled from a patient's blood vessel.

[0085]

[3] Subsequently, move a protector 1 in the direction of a tip to a needle object 100, for example using a finger or a pincette. since the sliding friction of a protector 1 is small by forming the contact section 36 at this time as mentioned above in this invention, a protector 1 is moved in the direction of a tip to a needle object 100 by the comparatively small operating physical force -- it can make -- this actuation -- smoothness -- it can carry out quickly and easily. furthermore, in this operation gestalt, a protector 1 is moved in the direction of a tip to a needle object 100 by the needle object contact section 35 consisting of resin ingredients by the still smaller operating physical force -- it can make -- this actuation -- further -- smoothness -- it can carry out quickly and easily.

[0086]

[4] By migration in the direction of a tip of a protector 1, if the needle object contact section 35 passes the latest section 103 of the needle point 101, a protector 1 will deform elastically (own elasticity) and will serve as the 2nd posture shown in drawing 2 . If a protector 1 serves as the 2nd posture, according to a brake operation (damping force) of the 1st part 21, migration in alignment with the longitudinal direction of a needle object 100 is forbidden (inhibition), and a protector 1 will stop to a needle object 100, before the needle point 101 reaches the 1st hole 11 (quiescence).

[0087]

Thus, it will stop to a needle object 100 according to a brake operation of the 1st part 21, and a protector 1 will not secede from the needle point 101, if the needle point 101 is moved to a wrap location. Therefore, the special structure (for example, structure which makes the outer diameter of a needle object 100 thick locally, establishes heights or a crevice in the periphery section of a needle object 100, or connects the hub installed in the end face side of a needle object 100 and a protector 1 with string or yarn) for preventing that a protector 1 passes the needle point 101 and secedes from the needle point 101 is unnecessary. Thereby, while being able to attain simplification of structure, it shall have the smooth peripheral face which does not perform special processing etc. for the point of a needle object 100, and neither a fall on the strength nor increase of **** resistance is caused. Moreover, a protector 1 can be used combining the existing needle object 100 without special structure, and its versatility is high.

[0088]

[5] Abandonment will be presented with these if the needle point 101 of a needle object 100 is contained in a protector 1. As mentioned above at this time, since the latest section 103 of the needle point 101 is covered with the 3rd wall 33 (needle point receptacle section) from a tip side, the needle point 101 does not project more than a protector 1, and a protector 1 does not secede from the needle point 101 according to a brake operation of the 2nd part 21. Thereby, abandonment processing etc. is faced and the accident in which a finger etc. is accidentally stabbed with the needle point 101 is prevented.

[0089]

As mentioned above, although the operation gestalt of illustration of the protector of this invention was explained, this invention is not limited to this and each part which constitutes a protector can be permuted by the thing of the configuration of the arbitration which can demonstrate the same function. Moreover, the structure of arbitration may be added.

[0090]

Moreover, in this invention, the 4th part of a protector body does not need to have the notch or hole which inserts in a needle object.

[0091]

Moreover, the protector of this invention does not have a plastics member, but the needle object contact section may consist of some protector bodies.

[0092]

Moreover, at this invention, there may not be the wrap covering section in some protector bodies [at least].

[0093]

As [consist of / a protector body / moreover, / two or more components] As [consist of / the energization member (spring) which energizes the tabular brake section and this tabular brake section in the direction in which whenever / to a needle object / tilt-angle / becomes small / for example, / another components]

[0094]

Moreover, the protector of this invention can also be used, being able to equip the detention needle assembly used for example, not only combining various hypodermic needles but combining a detention needle (outside needle).

[0095]

[Effect of the Invention]

As stated above, according to this invention, quick and the puncture implement which can cover the needle point of the needle object after use by the protector, faces abandonment processing etc., does not have the accident in which a finger etc. is accidentally stabbed with the needle point in insurance, and was extremely excellent with the health side and the safety aspect can be offered by easy actuation.

[0096]

By having prepared the contact section which contacts the part by the side of the end of the 1st part from a tip side at least at the time of the 1st posture in the 4th [of a protector body] part side, moreover, at the time of the 1st posture Especially the sliding friction to a needle object is small, and at the time of the 2nd posture which covered the needle point, since especially the damping force (fixed force) over a needle object is large, extremely excellent operability and safety are obtained.

[Brief Description of the Drawings]

[Drawing 1] It is the cross-section side elevation showing the operation gestalt (the 1st posture) of the protector of this invention.

[Drawing 2] It is the cross-section side elevation showing the operation gestalt (the 2nd posture) of the protector of this invention.

[Description of Notations]

1 Protector
11 1st Hole
12 2nd Hole
2 Protector Body
21 1st Part
22 2nd Part
23 3rd Part
24 4th Part
25 5th Part
26 Notch
3 Plastics Member

31 1st Wall
32 2nd Wall
33 3rd Wall
34 Needle Point Storage Space
35 Needle Object Contact Section
36 Contact Section
6 Covering Section
61 1st Covering Section
62 2nd Covering Section
100 Needle Object
101 Needle Point
102 Blade Surface
103 The Latest Section

CLAIMS

[Claim(s)]
[Claim 1]
It is the protector which can be relatively displaced along with the longitudinal direction of a needle object which has the sharp needle point at a tip into the 1st movable posture and the 2nd posture in which the relative migration which met at the longitudinal direction of said needle object where the needle point of said needle object is covered is forbidden,
The 1st part in which the 1st hole which comes to deform the plate-like part material which has the elasticity which consisted of metallic materials, and said needle object penetrates was formed, The 2nd part in which the 2nd hole which is located in a end face side and said needle object penetrates from this 1st part was formed, The 3rd part which connects said the 1st end of a part and said 2nd part, The protector body which demonstrates elastic force which acts so that it may have the 4th part formed so that it might extend in the direction of a tip mostly from the other end of said 1st part and whenever [to said needle object of said 1st part / tilt-angle] may be made small in said the 1st posture and said 2nd posture,
The needle object contact section which has the function to prevent that whenever [to said needle object of said 1st part / tilt-angle] changes by being prepared in a 4th [of said protector body / said] part side, and contacting the peripheral face of said needle object at the time of said 1st posture,
It is prepared in a 4th [of said protector body / said] part side, and has the contact section which contacts the part by the side of the end of said 1st part from a tip side at least at the time of said 1st posture,
When it moves in the direction of a tip relatively to said needle object and said needle object contact section passes said needle point from said 1st posture Deform so that it may become smaller than the time of whenever [tilt-angle / of said 1st part to said needle object] being said 1st posture according to the elastic force of said protector body, and it becomes said 2nd posture. The protector characterized by being constituted so that the relative migration which the frictional force between the inner skin of said 1st hole and the peripheral face of said needle object occurred or increased by this, and met the longitudinal direction of said needle object may be forbidden.
[Claim 2]
It is installed fixed to said 4th part of said protector body, and has the plastics member which consisted of resin ingredients,

Said needle object contact section and said contact section are a protector according to claim 1 which consists of said a part of plastics members, respectively.
[Claim 3]
Said plastics member is arranged with an almost perpendicular posture to said 4th part, and it has the side-attachment-wall section of the pair located mutual almost in parallel through said needle object,
Said contact section is a protector according to claim 2 which consists of heights by which protrusion formation was carried out, respectively from the end face by the side of the end face of said both-sides wall.
[Claim 4]
The protector according to claim 1 to 3 which satisfies the relation it is unrelated 0.8 <=B/A<=1 when magnitude of the include-angle change to said needle object of said 4th part at the time of comparing the time of said 1st posture and said 2nd posture is set to A and magnitude of the include-angle change to said needle object of said 1st part is set to B.
[Claim 5]
Said contact section is a protector according to claim 1 to 4 which maintains the condition of having contacted also at the part by the side of the end of said 1st part or the time of said 2nd posture from the tip side.

[Translation done.]